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shells that they were not worth while preserving. The first nest was found by John W. Mailliard near Mark West Springs, when on a collecting trip through Sonoma county with C. A. Allen. It was in a Douglas spruce, a way out on a horizontal limb. The attempt was made to tie up the limb and saw it off, but the outer end was so heavy that it dropped and spilled out the eggs—a drop of some twenty-five feet. The eggs were three in number and incubation advanced, and the date was May 19, 1884.

The second nest was found by my son and me, at Seaview, near old Fort Ross, on May 17, 1908, when we were on our way to the nest of the Monterey Hermit Thrush (*Hylocichla g. slevini*) mentioned in THE CONDOR, vol. X, p. 134, and was also in a Douglas spruce, about thirty feet from the ground, and twelve or fifteen feet out from the trunk. This limb was straight across a ranch wagon road running through the forest, used often enough to be worth keeping in repair. We endeavored to sling the limb to the one above it, so as to be able to cut it off at the butt and haul it in far enough to reach the nest. But we had nothing with us but a strap or two, suspenders, etc., and the limb was so crooked and badly balanced that it turned over in spite of us, and spilled out the eggs. These were three in number and fresh. The parents were secured for the record. The nest, as was the one mentioned above, was composed principally of "Spanish moss", with a slight exterior framework of fine spruce twigs, mostly forked, among which were mingled a few dry rootlets, and lined with horsehair and some fine rootlets. The main portion of the nest—not considering the loose, surrounding framework of twigs, the ends of which projected out very irregularly to a considerable distance, and confining the limits to the more solid structure of "Spanish moss"—had an outside diameter of 127 mm. and an inside diameter of 73 mm., the depths being respectively 47.5 and 31.6. This shows the nest to be rather a shallow structure, but the main portion quite compact and well built.

Mr. P. M. Silloway, describing a nest of the Western Tanager at Flathead Lake, Montana, says: "It was made of coarse *forky* twigs as an outer framework, * * *. When removed from its site the loose twigs in the outer part of the nest fell away like that part of a grosbeak's nest." And so it was, as far as the exterior framework was concerned, with the nests taken in Sonoma county. But the Montana nest was evidently made, in the main part, of different material. These two Sonoma county nests seem to be very different from that taken in the Sierras and described by C. Barlow in *The Osprey*, Vol. I, p. 6. This difference shows that the Western Tanager is more adaptive to surroundings in the matter of elevation above sea level, and materials for nest construction, than is popularly supposed. Neither of our two records were more than a few hundred feet above sea level, and the one taken at Seaview was within three miles of the Pacific Ocean.

DOVES ON THE PIMA RESERVATION

By M. FRENCH GILMAN

THE doves in this part of Arizona form a most interesting group and even the more luke-warm bird-lovers would be delighted to study them. Their prominence both to eye and ear calls attention to them and though so numerous and common, their absence would leave a big void. The Mourning Dove, *Zenaidura m. carolinensis*, is present in greater or less numbers the entire year, breed-

ing abundantly in suitable places throughout the entire district. The Indian name is Haw'-he and my informant told me in connection with the matter what he considered quite a joke. He was working for a man who asked him the Indian name for the dove and was told correctly. The next day they saw the bird again, and the Indian, wishing to see how well the term was remembered, asked for the name. The white man at once responded "Hé-haw." The Indian laughed heartily as he told the story, and all that day whenever we saw a dove he would say Hé-haw and chuckle.

During November and December they are fewest in number, but in January and February many more arrive, and in the breeding months they are everywhere. Nesting begins the first part of April, my first find being dated April 12, the nest containing eggs partly incubated. Many nests were noted during April, May, June and July, with no attempt made to keep a correct census of them. August 13 was the latest date, and on that day two nests with eggs were seen. Nests were abundant from April 15 till July 15 and in all sorts of situations. One was on the ground under a cotton plant, and others in trees as high as twenty feet from the ground. The average height was seven and a half feet, and extremes were three feet and twenty feet. Mesquite trees being more numerous contained the most nests, though many were found in other growth, such as *Sarcobatus* or greasewood, Cholla cactus, willow, *Baccharis*, *Zizyphus* or wild jujube, *Atriplex* or salt bush, *Prosopis* or screw-bean, ironwood, cottonwood, and pear tree. A favorite site was on top of a mesquite stump where the young shoots formed a shade and concealment. The brooding bird as a rule was quite tame on the nest, and generally went through the pretence of being wounded when scared from her home. After the young are grown, small flocks are seen on cultivated fields all fall and winter. The Indians never hunt them and they are quite tame.

The White-winged Dove or Sonora Pigeon, *Melopelia asiatica*, is migratory, arriving here about the 20th of April. Their coming is coincident with the ripening of the berries of the wild jujube, *Zizyphus lycioides*, upon which they feed greedily as long as the fruit lasts, consuming both ripe and green. The Pima term for the bird is Aw-kaw'-kwe. They come in such great numbers that the wheat fields suffer and the loss is considerable. The Indians try to frighten them away from the fields but do not hunt them. Probably they figure that ammunition would count up more on the debit side than would the wheat destroyed. At present there is no closed season and the beautiful birds may be shot whenever present. There was an attempt recently made to have them protected, but such a howl went up from the ranchers that nothing was done. It seems a pity to hunt them during the breeding season, but if we were raising wheat we might look upon the practice with more philosophy. The white color pattern shown when the bird is in flight is quite striking. When perched, the white on the wings is rather inconspicuous, but in motion it shows as two broad crescents, and the white crescent-shaped bar across the tail, generally spread a little in flying, adds greatly in producing the striking effect.

From the day of their arrival in spring they set up a continual call which may be roughly described as Co-co'-o-cok'-co-co'-o.

This call is heard in all directions from morning till night and in such volume that it becomes a sort of continuous bass hum, a background or sounding board for all the other bird songs and calls. It lacks the plaintive tone of the Mourning Dove call, and to most people becomes a dreary monotonous droning which wears on their nerves. Be that as it may, the sight and sound of the bird is part and parcel of the mesquite desert and would be sorely missed. The gunner, in these

birds, has a good test of his skill, as they fly very rapidly with seemingly little effort, and the rate of speed is hard to estimate. They will carry off a large load of shot too, and all things considered are a fine game bird. As soon as the young are grown both they and the parents congregate in large flocks and fly from feeding ground to watering place, thus affording a good chance at wing shooting. One evening in twenty minutes I counted over 700 fly past a bridge over a small irrigating canal.

In addition to the wheat, these doves feed on other grains and much weed seed. They are very fond of sorghum seed, and large flocks gather on a field of this plant. The giant cactus (*Cereus giganteus*) furnishes them a large amount of food also. They may be seen on top of the great columns as soon as the first blossoms appear, thrusting their bills into the trumpet-shaped flowers, but whether for insects, pollen, or nectar was not learned. As soon as the fruit ripens, however, there is no doubt as to what they are seeking. Their actions are a sufficient index even without the tell-tale red stain around their mouths. They frequent the cactus groves as long as any fruit is left, flying a long distance to reach this delicacy.

Besides the danger from gunner, the Cooper Hawk is a menace, feeding often on the fat pigeon. I have seen a Marsh Hawk after a White-wing with a broken wing but do not think any but wounded birds are ever attacked by this species.

Along in August the big flocks begin to grow less, the birds probably scattering out and seeking feeding grounds more distant from the breeding grounds. Toward the first of September they begin to thin out in earnest and by the 15th of the month very few are seen. Individuals may linger a little longer, as in 1909 I saw one as late as October 12, and in 1910 the last seen was on September 25. A few lingered on a sorghum field up till September 10 of this year but were not seen any later.

In April, soon after the birds arrive, I have shot some that looked like young or immature birds. Possibly some individuals may raise a brood before leaving their winter home or these may have been very late hatched squabs of the previous summer. I am inclined to think they were hatched earlier in the season in their southern resort before the northern movement began, as there always seems to be a lot of doves sitting around or flying in small squads who seem to have no family cares. These may be the parents who have already performed their duty.

Nesting begins soon after arrival in the spring and as only a slight platform is built for a nest, not much time is lost in construction. The nest is practically the same as that of the Mourning Dove though perhaps a little larger, as the White-wing is some larger. They nest in a sort of scattered colony, and frequently two and three nests are seen in a large mesquite tree. In some favored groves about every third big tree has one or more nests. Much of the nesting is done in May and June, and in July they are congregated in large flocks. The earliest date I have recorded for eggs was May 10, and at that time a great many new nests were seen. In 1908 and 1909 most of the nesting seemed to be done in May and June, but in 1910 the season reached well into July, as in that month I found twenty-one nests containing eggs or young birds. Possibly nests may have been found in July of the other seasons had I been as assiduous in searching for them. I kept on the lookout during all three years but was particularly on the alert last July, as the previous August I had found a nest with eggs on the 2nd of that month, and I wished to specialize on the late nesting. This August nest contained eggs nearly hatched, and the bird brooding them looked like an immature one, a bird of the year, which possibly was the case.

Nests are always, as far as my observation goes, placed in trees or shrubs at

varying distances from the ground. The average height was ten feet and extremes ranged from four to twenty-five feet. The only nest as low as four feet was built in a mesquite tree and placed on top of an old Thrasher's nest. This may have been a shiftless bird; but I found several others using old Cactus Wren's nests as foundation, and one had made use of a deserted Verdin's home.

The eggs are a little larger than those of the Mourning Dove and lack the pearly luster, the shell looking much like that of the tame pigeon's egg. Two is the usual number in a nest, but July 10 I found a nest containing three partly incubated eggs.

In choice of nesting sites the bird shows a decided preference for mesquite, as about 70 per cent of nests noted were in that plant. About 20 per cent were in willows, and 3 per cent each in cottonwood, *Opuntia fulgida* or tree cholla, and *Prosopis odorata* or screw-bean. *Baccharis gluten* brought up the rear with 1 per cent. The dove is usually very wild on the nest, flying off whenever approached as close as twenty-five feet. Rarely is the broken-wing play made, though I have seen a few mild attempts at it, and occasionally one will allow an approach as close as fifteen feet to the nest before taking flight.

The Mexican Ground Dove, *Chaemepelia p. pallescens*, is a most interesting little fellow in spite of his rather formidable name. He might properly be called the "woo-woo bird," as his note is a single "woo" long drawn out and uttered at short intervals. The sound is very misleading, even to a greater extent than that of the Mourning Dove. The first time I heard it I started to cross a ten-acre field to search for the bird in some trees on the far side. I had gone but a few yards when the dove flew from a fruit tree about three rods away, where he had been the entire time.

These little doves are not very gregarious in this locality, but that may be because they are present only during the breeding season. Three is the most I have seen in a group and that not often. Usually two are together, probably mates. They are rather quiet and the call is not heard often, though this may be on account of their few numbers in this locality. I have seen but seven nests during a residence of three years here, and have not seen very many of the doves. They do not appear to go far from cultivated fields, in fact I have never seen them out on the desert, as is the case with the two larger doves. They are most frequently seen near the river or along irrigating canals, and nest in such locations.

They are absent from this locality during the winter months, usually making their appearance about the middle of March. November 18 is the latest I have seen them but they are rarely seen as late as October 20.

In size they are about like the Inca Dove but may be distinguished in the field by darker coloration and short tail with black outside feathers instead of white. The flight is the same series of jerks as described by Mr. Beebe, who said they jerked themselves through the air. I have never tried to shoot one on the wing, and imagine it would be a serious undertaking if success followed. I have never heard the call given from the ground, but always from a tree or the top of a shrub. They are not very wild but their tameness does not approach the point of familiarity by any means.

The nesting season is late, as the earliest nest found was on July 7 and contained one half-grown young bird. This nest was in a pear tree and placed only two and a half feet from the ground. On July 16, a nest with two young, quarter-grown; July 17, nest and two half incubated eggs; September 3, nest with half-grown young; September 11, young just hatched; September 25, nest with two eggs, advanced incubation; October 8, nest with two nearly fresh eggs. This last

nest I wanted to collect, but the date was so late that I decided to watch and see if the young could hatch and mature. They hatched October 16, but two days later I found both young cold and dead in the nest. Nests ranged from two and a half to twenty-five feet from the ground, with an average of ten feet. In regard to location, two were in cottonwoods, two in pear trees, one in a willow and two in the shrub *Baccharis*.

The nests are fairly well made for doves and are composed mostly of rootlets and small twigs. One nest rather more pretentious than usual was made of rootlets, grass stems and blades, leaf stems with veins attached, small twigs, horse hair and a few feathers. It was compact and fairly well made, with a decided cup in the center measuring nearly an inch deep, and two inches across from rim to rim. One was an old nest re-vamped, and another was merely a superstructure over an old Abert Towhee's nest. The very late date before mentioned was probably the second brood, as the nest was an old one re-lined, possibly a last year's nest, but more likely an earlier nest of the same year.

These doves are rather wild when on the nest and will not allow any familiarity. They rarely show any tendency to use the broken-wing tactics, though one did and made a most realistic performance of it. She fell from the nest when I was about eight feet distant and lay with quivering and beating wings. As I stepped closer she made ineffectual attempts to fly and fluttered along the ground at my feet just out of reach. She kept this up for about fifty yards before taking to flight. I then went on about my business after ascertaining that the nest contained two newly hatched young. Coming back an hour later, I scared her off the nest again and she repeated the performance but in a rather half-hearted way as though she did it from a sense of duty and rather doubted the efficacy of it.

The vivacious little Inca Dove, *Scardafella inca*, is the cream of the dove family and is in the public eye or ear most of the time. Whether sitting on a barbed wire fence or a clothes line, with long tail hanging down perfectly plumb, or marching around in a combative manner with tail erect at right angles to the body, or rushing around busily and hurriedly, not to say greedily, feeding with the chickens in the back yard, it shows a decided individuality and arouses interest and affection. If I could transport to my California home the Bendire Thrashers to sing to me and the Inca Doves to amuse me I would surely do it.

I have never seen them far from dwellings or barns, and even in nesting they show a decided preference for human company. They feed in yards with poultry, perch on back-yard fences, and seem as much part of the establishment as the wood-pile. They are rather dainty in their drinking, rarely using the chicken's drinking vessel, but perching on the hydrant and catching the drops of water as they leak from the pipe. To do this they nearly have to stand on their heads but that does not bother them at all. They eat wheat and other small grains but draw the line at corn, it probably being too large for them to swallow. At our house we always include rations for the Incas when ordering wheat for the poultry.

These little doves are with us the year through and their hard metallic little coo can be heard every month in the year, though most in evidence during the breeding season. As I write this I can hear the "coo-coo" which gives them their Pima name of Coo-coo. The call is much in evidence also during the heat of July and August, at which trying time people with nerves complain of the constant noise they make, which begins early in the morning and ends late in the evening. There is an insistent, persevering quality about the calling that is quite impressive, and when a lot of them keep at it some people sit up and take notice. They are

numerous too, as I have counted more than twenty feeding with about a dozen chickens in a small yard.

The Inca Dove could never have inspired the term "dove of peace", as they are pugnacious to a fault and fight like little fiends. Two of them will face each other with one wing on guard, held straight above the body; then close in and mix it, buffeting with wings till the sound of the blows is audible at a distance of fifty yards. The bill is also used with bloody results about the head. I have been told that one will sometimes kill the other but never saw such an extreme case. When arranging for a fight the combatants utter a sort of growl, if it may be so described: a very guttural, anger-expressing sound. In animated talk, gossip perhaps, they excitedly utter sounds something like "cut-cut-ca-doo-ca-doo". In all, quite a vocabulary is at their command. In motion they are quick and lively, and have the same jerky flight as do the Ground Doves.

The nests of these doves are nearly always placed near a dwelling or a barn. I have never seen a nest more than a hundred yards from a building of some kind, and many of them are as close as they can find a tree in which to build. A row of umbrella trees close to a dwelling has for three years been a favorite place for nests, and also a row of cottonwood trees along the front yard. These two kinds of trees are most frequently used, probably on account of their nearness to houses. Mesquite trees and fruit trees are also drawn on for homesteads. The nest is a little more elaborate than that of the two large doves and shows more of a depression or cup in the center. Rootlets, twigs, grass and leaf stems are materials used in the construction. The birds are generally quite tame on the nest, rarely flying off till the intruder comes closer than arm's length. I have placed my hand as close as ten inches to a brooding bird, but have never quite been able to pet one on the nest. They are so accustomed to human presence that the broken-wing subterfuge is rarely resorted to. The average distance from the ground, of a number of nests was twelve feet and they ranged from seven to twenty feet.

Fighting and cooing begins about the first of February, but the earliest nesting date I have recorded was April 11, when fresh eggs were found. The latest date was September 25, when a nest containing eggs slightly incubated was found. At least two, and possibly three broods are raised during the year. The past season I noted four cases where two broods were raised in the same nest, and two cases where a last year's nest was re-lined and used. Two nests found were built on top of old Cactus Wrens' dwellings.

Though so tame and accustomed to human presence, when caught the doves are violent in their attempts to escape. I trapped two at different times to have a friend take their photograph. I placed them in a cage to await the coming of the camera man but they used the same jerky motions to escape that they do in flying, and went at it with the same vim that they do in fighting. They were fast injuring their heads and I released them after a few minutes.